Development of the Pantex Plant Site Profile

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Energy Employees Occupational Illness Compensation Program Act (EEOICPA)

Department of Labor

Department of Health
and Human Services – NIOSH

Oak Ridge Associated
Universities Team

Dose

Reconstruction

Purpose of Meeting

- We will discuss the Pantex Plant Site Profile.
- We will describe how the Site Profile is used.
- We are asking you for your suggestions and information.
- We want to document your concerns and issues.
- We want to answer your questions.

ORAU TEAM Program Goals

- We will protect the claimant's privacy.
- We want to process claims accurately, fairly and efficiently.
- We want to work with you to get your input and comments on our work on this project.
- We will avoid conflicts of interest.

Occupational Radiation Dose

Occupational Medical Dose

Occupational Environmental Dose

Internal Dose

External Dose

Site Profiles

Site Profile documents contain information about the activities and practices at a given Site, focusing on the radiation protection practices.

Site Profiles

The Site Profile provides information on:

- Potential radiation exposures
- Radiation sources
- Radiation dosimetry program

Site Profiles

- The larger Site Profile documents contain six Technical Basis Documents (TBDs) that focus on specific topic areas.
- The Site Profile and the TBDs provide technical guidance to prepare dose reconstructions.

Site Profiles

- These are living documents that can be revised when additional information is obtained.
- These documents assist NIOSH in completing the work required for each dose reconstruction.

Site Profiles

We use the word “facility” as a general term for an area, building, or group of buildings that had a specific purpose at a site.

“Facility” does not necessarily mean or refer to an "atomic weapons employer facility" or "Department of Energy facility" as defined in the Act.

Site Profiles Support Dose Reconstruction

- Used by health physicists in reconstructing doses.
- Provide site-specific technical information.
- Minimize interpretation of data in reconstructing dose.
- Are living documents.

General Information

- NIOSH wants your input. You should send your comments directly to NIOSH.
- We are meeting with union representatives at all sites to encourage input.
- You can see the completed Site Profiles at http://www.cdc.gov/niosh/ocas/ocastbds.html .

Developing the Pantex Plant Site Profile

- The TBDs are written by subject experts.
- Every TBD is reviewed by NIOSH.
- Every TBD must be approved by NIOSH.

Developing the Pantex Plant Site Profile

- The Pantex Plant Site Profile team was established in May 2003.
- The Team Leader was Jerry Martin, now Dill Shipler.
- The TBDs were written by different authors.

Contents of Site Profile

- Purpose and Scope
- Site Description
- Occupational Medical Dose
- Occupational Environmental Dose
- Occupational Internal Dosimetry
- Occupational External Dosimetry

Purpose and Scope

The Site Profile:

- Is used to reconstruct radiation doses to workers at Pantex.
- Covers the time from when the site opened in 1951 to the present.
- Uses claimant-favorable assumptions when information is missing.

Site Description

- Briefly describes the facilities and processes at Pantex over the years.
- Lists the radioactive materials and radiation sources present.
- Identifies potential internal exposures.
- Identifies potential external exposures.

Pantex Plant

- Assembly and disassembly of nuclear weapons.
- Radionuclides – plutonium, depleted and enriched uranium, tritium, and thorium.
- Incidents in 1961 and 1989.

Occupational Medical Dose (X-rays)

- How often were chest X-rays taken?
- What equipment and techniques were used?
- What was the radiation dose to specific organs?
- How should this information be used to reconstruct the radiation dose?

Occupational X-ray Dose

- Only X-rays required by the employer are included.
- X-ray equipment used changed over time.
- Older equipment gave off more X-ray.
- This radiation dose is not included in the worker’s DOE dose record.

Occupational Environmental Dose
(for workers who were not monitored)

Workers who are not radiation workers (badged) can be exposed to radiation from:

- Radioactive materials in the air.
- Radiation sources in buildings.
- Radioactive materials in the work environment.

Occupational Environmental Dose
(for Unmonitored Workers)

- Radiation dose inside the body from radioactive materials that are in the air the worker breathes.
  - Releases of depleted uranium and tritium to air on the site.

Occupational Environmental Dose
(for Unmonitored Workers)

- Radiation dose from radioactive materials that are outside the worker's body but are in the worker's environment.
  - Radiation sources in facilities.
  - Radioactive materials in on the ground and on other surfaces.

Occupational Environmental Dose
(for Unmonitored Workers)

- Internal radiation dose
  - Calculate the amount of radioactive material taken into the body the from the concentration in the air.
  - Calculate the radiation dose to specific organs.
- External radiation dose
  - Calculate the radiation dose to the whole body from radiation sources that are outside of the body.
  - Calculate the radiation dose to specific organs.

Occupational Environmental Dose
(for Unmonitored Workers)

- Provides instructions for reconstructing doses.
- This environmental dose is not included in the worker's DOE dose record.

Occupational Internal Dosimetry

- Methods and practices
- Sources of exposure
- Minimum detectable activity (MDA) for:
    - Whole Body Counting
    - Urinalysis
- Reporting levels
- Instructions for reconstructing dose

Internal Dosimetry

- Air monitoring, nose swipes, and facial contamination measurements were done as needed.
- Bioassay program:
  - Primarily event driven.
  - Routine urinalysis for tritium started in 1986.
  - Routine urinalysis for uranium, thorium and plutonium started in 1991.
- Measured X- and gamma-emitting radioactive materials inside the body with whole body counter in 1989. Data are considered unreliable.

Occupational External Dosimetry

- Methods and practices
- Sources of exposure
- Adjustments to recorded dose
- Minimum detectable levels (MDLs)
- Instructions for reconstructing dose

External Dosimetry

- Dosimeter technology
  - Beta/photon – 1952 to present
  - Neutron – 1958 to present
- Calibration procedures
- Exchange frequency
- Workplace radiation fields
- Exposure geometry

In Conclusion

- Developing a usable Site Profile is an important task.
- Site Profiles are living documents.
- Additional information is being sought and will be used when it adds to the document.
- Send comments directly to NIOSH.

Sending Comments to NIOSH on Site Profile Documents

- NIOSH welcomes comments from all interested stakeholders (organized labor groups, worker advocacy groups, claimants, etc.) on the Site Profile documents.
- Please include the name of the site, the title of the document, and the Site Profile number when submitting comments.

Sending Comments to NIOSH on Site Profile Documents

Send all comments to:

Department of Health and Human Services
National Institute for Occupational
Safety and Health (NIOSH)
Robert A. Taft Laboratories MS-C34
4676 Columbia Parkway
Cincinnati, OH 45226
Fax: (513) 533-8230
email: siteprofile@cdc.gov

NIOSH Website

You can find information about the NIOSH Office of Compensation Analysis and Support (OCAS) and the EEOICPA at their website http://www.cdc.gov/niosh/ocas/ .